(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization

International Bureau





(43) International Publication Date 29 July 2004 (29.07.2004)

PCT

(10) International Publication Number WO 2004/062890 A3

(51) International Patent Classification⁷: C09D 11/00, B29C 67/00, H01M 8/12, 4/88

(21) International Application Number:

PCT/GB2004/000045

(22) International Filing Date: 8 January 2004 (08.01.2004)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

0300533.7 0300529.5

10 January 2003 (10.01.2003) GB 10 January 2003 (10.01.2003) GB

(71) Applicant (for all designated States except US): QINE-TIQ NANOMATERIALS LIMITED [GB/GB]; Registered Office, 85 Buckingham Gate, London SW1E 6PD

(72) Inventors; and

(GB).

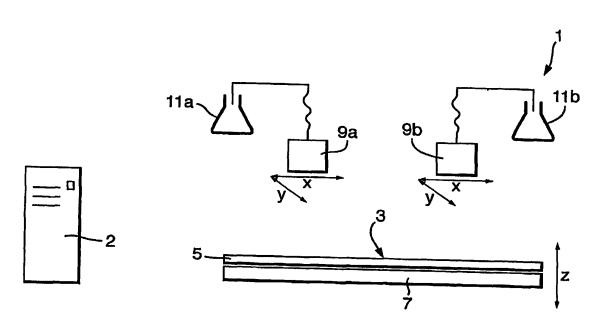
(75) Inventors/Applicants (for US only): WRIGHT, Emma, Victoria [GB/GB]; QinetiQ Limited, Cody Technology Park, Ively Road, Farnborough, Hampshire GU14 0LX

(GB). GORE, Jonathan [GB/GB]; QinetiQ Limited, Cody Technology Park, Ively Road, Farnborough, Hampshire GU14 0LX (GB). HOOPER, Alan [GB/GB]; QinetiQ Limited, Cody Technology Park, Ively Road, Farnborough, Hampshire GU14 0LX (GB). WALKER, Laura, Diane [GB/GB]; QinetiQ Limited, Cody Technology Park, Ively Road, Farnborough, Hampshire GU14 0LX (GB).

- (74) Agent: JOHNSON, I., M.; QinetiQ Limited, IP Formalities, Cody Technology Park, A4 Building, Room G016, Ively Road, Farnborough, Hampshire GU14 0LX (GB).
- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),

[Continued on next page]

(54) Title: IMPROVEMENTS IN AND RELATING TO DEPOSITED STRUCTURES



(57) Abstract: A composition, method and apparatus for ink jet deposition of structures are described. Structures which may be deposited have many advantages as a result of their small scale. This is believed to be a result of the sub-micron sized loading used in the composition. Solid Oxide Fuel Cells (SPFCs) are a particular structure which may advantageously be deposited.

WO 2004/062890 A3



Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declaration under Rule 4.17:

of inventorship (Rule 4.17(iv)) for US only

Published:

with international search report

- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments
- (88) Date of publication of the international search report: 7 April 2005

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

INTERNATIONAL SEARCH REPORT

----ational Application No

/GB2004/000045 A. CLASSIFICATION OF SUBJECT MATTER IPC 7 CO9D11/00 B290 B29C67/00 HD1M8/12 H01M4/88 According to International Patent Classification (IPC) or to both national classification and IPC B. FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) CO9D HO1M B29C B41J Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched Electronic data base consulted during the International search (name of data base and, where practical, search terms used) EPO-Internal, PAJ C. DOCUMENTS CONSIDERED TO BE RELEVANT Citation of document, with indication, where appropriate, of the relevant passages Category ' Relevant to claim No. X WO 00/00335 A (STANFORD RES INST INT) 1,4,6,7, 6 January 2000 (2000-01-06) 9,10,12, page 2, lines 10-15 page 18, columns 13-20 claims 1.17 X US 2002/105080 A1 (SPEAKMAN STUART) 1-4,6,138 August 2002 (2002-08-08) paragraphs '0187!, '0231!; claims 1-23 χ EP 1 238 708 A (SEIKO EPSON CORP) 1,4,6,7, 11 September 2002 (2002-09-11) 9,10,13 paragraphs '0074!, '0075!; claims 1-12; figure 1 -/--Further documents are listed in the continuation of box C. Patent family members are listed in annex. Special categories of cited documents: *T* later document published after the International filling date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the *A* document defining the general state of the art which is not considered to be of particular relevance 'E' earlier document but published on or after the International filing date "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "L" document which may throw doubts on priority claim(s) or which is clied to establish the publication date of another citation or other special reason (as specified) document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art. °C° document referring to an oral disclosure, use, exhibition or other means document published prior to the international filing date but later than the priority date claimed "&" document member of the same patent family Date of the actual completion of the international search Date of mailing of the international search report 20 January 2005 31/01/2005 Name and mailing address of the ISA Authorized officer European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016 Reich, C

INTERNATIONAL SEARCH REPORT

distribution No /GB2004/000045

| C.(Continu | ation) DOCUMENTS CONSIDERED TO BE RELEVANT | /GB2004/000045 |
|---------------|--|-----------------------|
| Category ° | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
| Α | WO 99/13994 A (BASHIN SUNITY; ANNAVAJJULA DURGA (US); STANFORD RES INST INT (US); NI) 25 March 1999 (1999-03-25) page 9, paragraph 1 | 1-15 |
| A | WO 00/69007 A (RYBA GAIL N ; SANDIA CORP (US); BARRON CAROLE C (US); HECHT ANDREW (US) 16 November 2000 (2000-11-16) page 27, line 8 - page 28, line 2 | 1-15 |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| PCT/ISA/210 (| continuation of second sheet) (January 2004) | |

INTERNATIONAL SEARCH REPORT

Information on patent family members

/GB2004/000045

| | | | | | 32004/000045 |
|--|----|---------------------|--------|----------------------------|------------------|
| Patent document cited in search report | | Publication date | | Patent family member(s) | Publication date |
| WO 0000335 | Α | 06-01-2000 | US | 5980813 A | 09-11-1999 |
| | | | ΑU | 4553099 A | 17-01-2000 |
| | | | CA | 2334517 A1 | 06-01-2000 |
| | | | EP | | 06-01-2000 |
| | | | JP | 1117518 A1 | 25-07-2001 |
| | | | | 2002519212 T | 02-07-2002 |
| | | | MO | 0000335 A1 | 06-01-2000 |
| | | | US | 6146716 A | 14-11-2000 |
| US 2002105080 | A1 | 08-08-2002 | GB | 2330451 A | 21-04-1999 |
| | | | GB | 2330331 A | 21-04-1999 |
| | | | US | 2003076649 A1 | 24-04-2003 |
| | | | US | 2004151014 A1 | |
| | | | AU | 9451098 A | 05-08-2004 |
| | | | CA | 2306384 A1 | 03-05-1999 |
| | | | EP | 2300364 AI | 22-04-1999 |
| | | | | 1027723 A2 | 16-08-2000 |
| | | | GB | 2376344 A ,B | 11-12-2002 |
| | | | GB | 2376565 A ,B | 18-12-2002 |
| | | | GB | 2376566 A ,B | 18-12-2002 |
| | | | WO | 9919900 A2´ | 22-04-1999 |
| | | | GB | 2369087 A ,B | 22-05-2002 |
| EP 1238708 | Α | 11-09-2002 | JP | 2002196127 A | 10-07-2002 |
| | | | EP | 1238708 A1 | 11-09-2002 |
| | | | ĊN | 1400927 T | 05-03-2003 |
| | | | WO | 0232582 A1 | |
| | | | ÜS | 2002054197 A1 | 25-04-2002 |
| | | | | | 09-05-2002 |
| WO 9913994 | Α | 25-03-1999 | US | 5980998 A | 09-11-1999 |
| | | | AU | 749943 B2 | 04-07-2002 |
| | | | AU | 9383498 A | 05-04-1999 |
| | | | CA | 2302252 A1 | 25-03-1999 |
| | | | EΡ | 1028818 A1 | 23-08-2000 |
| | | | JP | 2001516805 T | 02-10-2001 |
| | | | WO | 9913994 A1 | 25-03-1999 |
| | | | US | 6548122 B1 | 15-04-2003 |
| | | | | | 15-04-2003 |
| WO 0069007 | Α | 16-11-2000 | AU | 4993200 A | 21-11-2000 |
| | | | CA | 2370899 A1 | 16-11-2000 |
| | | | CN | 1349670 T | 15-05-2002 |
| | | | EΡ | 1190460 A1 | 27-03-2002 |
| | | | JP | 2002544649 T | 24-12-2002 |
| | | | | | |
| | | | WO | 0069007 A1 | 16-11-2000 |